Scratch Program

Maze Adventure

By G. Mullin and D. Carty
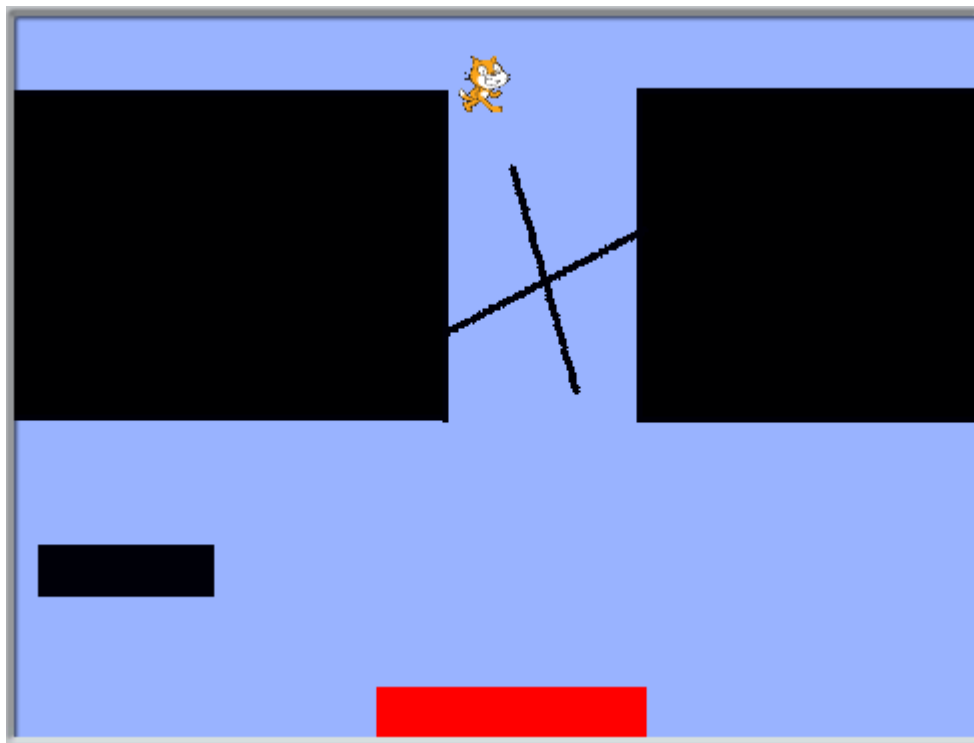
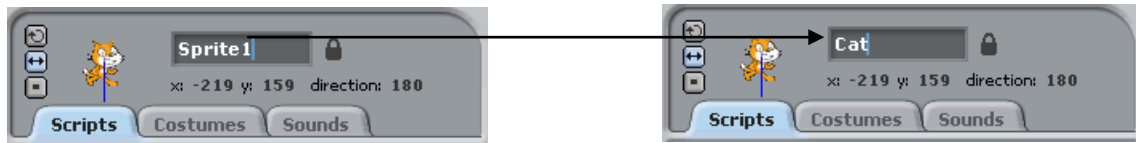Created by G. Mullin and D. Carty

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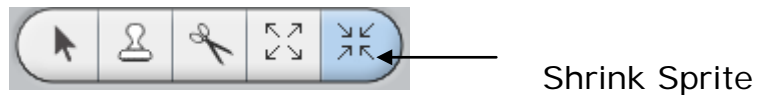## Load Scratch and start a New Project

Step 1.   Rename our Sprite

At the moment, our Cat is called Sprite1 – Rename him "Cat"

Step 2   Shrink the Cat

At the moment our cat is way too big – use the "Shrink Sprite" button, then click the Cat a few times to make him very small. (Check the front cover for the size)

Shrink Sprite

Step 3   Controlling the Cat

In this game, we will use the arrow keys to control the Cat.

Add the following modules to the Cat:

when right arrow key pressed change x by 10	This will move the cat to the right when the right arrow is pressed
when left arrow key pressed change x by -10	This will move the cat to the left when the left arrow is pressed
when up arrow key pressed change y by 10	This will move the cat up when the up arrow is pressed
when down arrow key pressed change y by -10	This will move the cat down when the down arrow is pressed

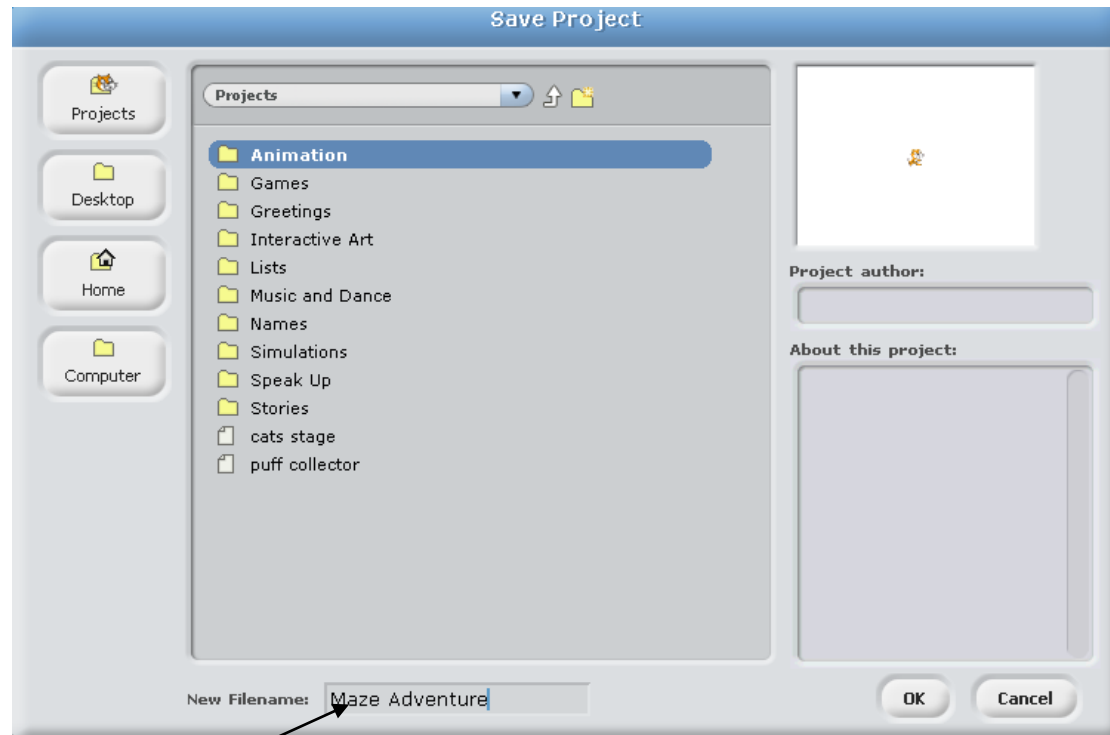TRY IT!   You should be able to control the Cat with the arrows!

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Step 4.   Saving your work

Now is a good time to save your work.

Select   Save As   from the Menu at the top.

The following dialog box appears:

Call your file 'Maze Adventure', but **DO NOT CLICK OK**.

Note: It is VERY important to save your file to the correct location – otherwise you won't find it next time.

Your teacher will show you where to Save your file. (Usually in your 'My Documents' folder)

Next time, to open your file, simply load scratch and click   Open

A similar dialog box will appear – you can use this to find your file (remember where you saved it) and load it.
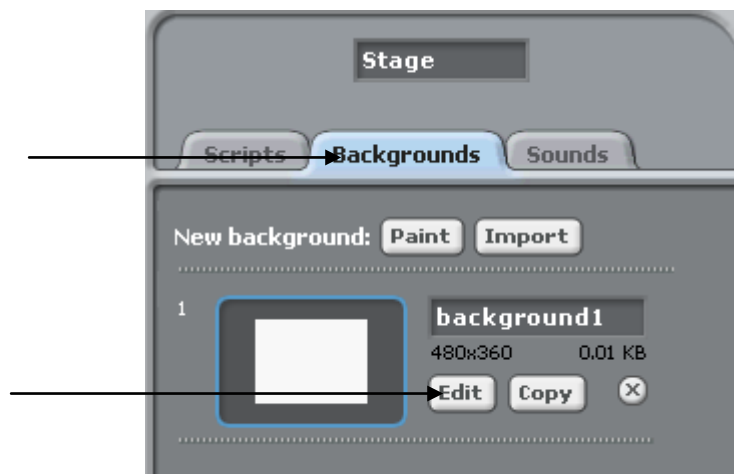
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Step 5   Making a New Background

We are going to make a new background for our game.
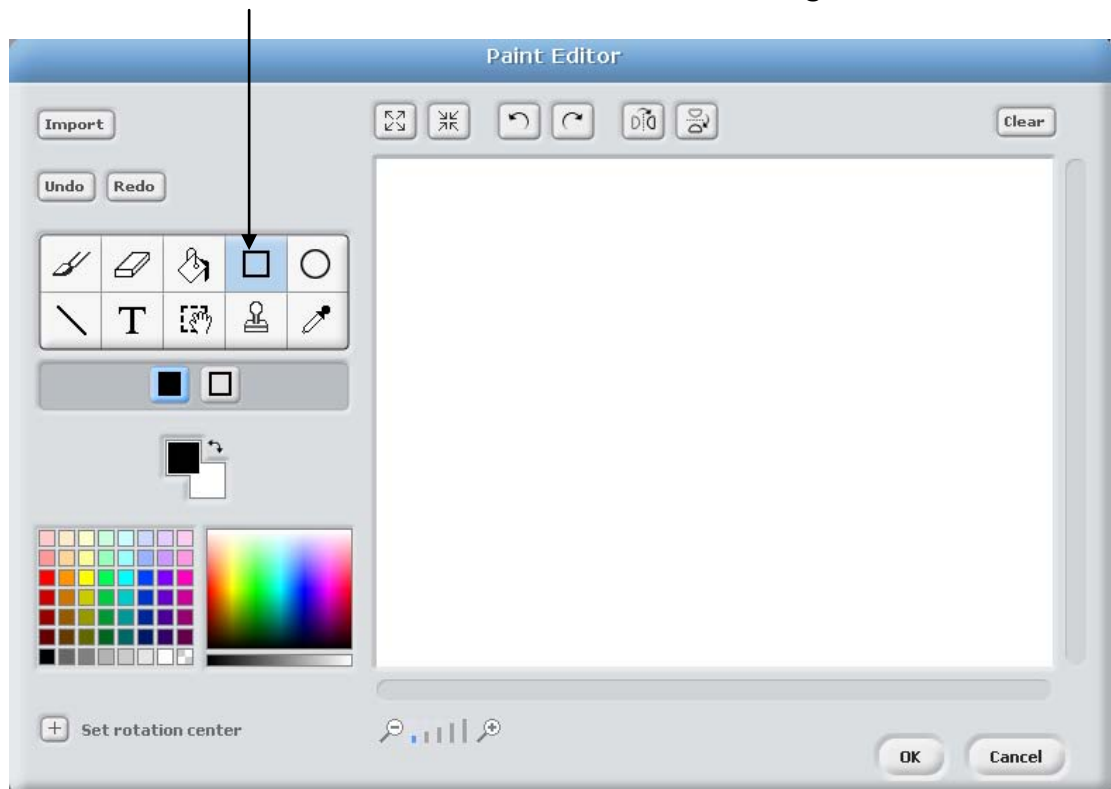
Select the Stage from the Sprite List:

Now select the 'Backgrounds' Tab, then click 'Edit':
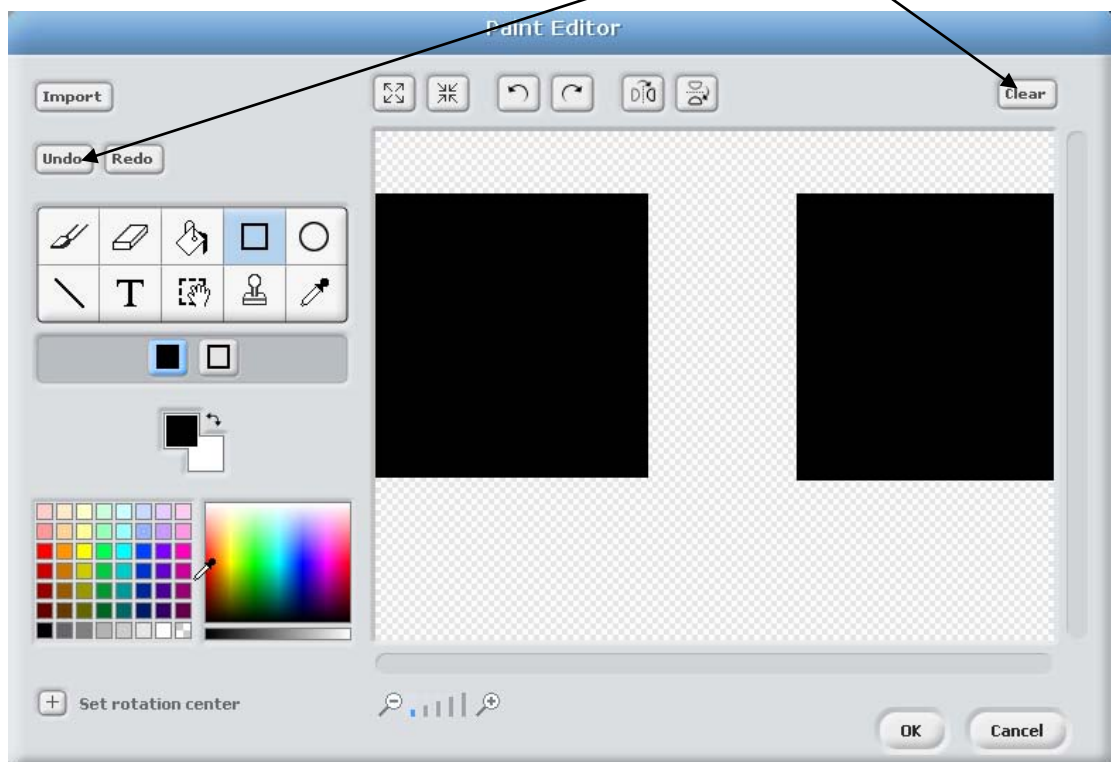

The 'Paint Editor' window appears.

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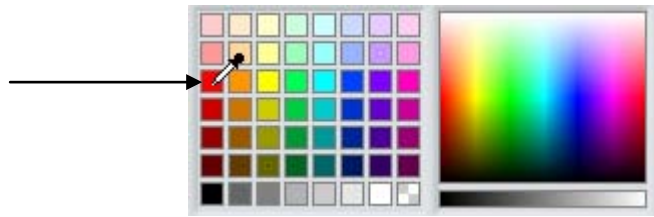From the Paint Editor window, choose the Rectangle tool:

Use the Rectangle tool to draw 2 black rectangles as shown:

If you make a mistake, you can use the Undo or Clear buttons
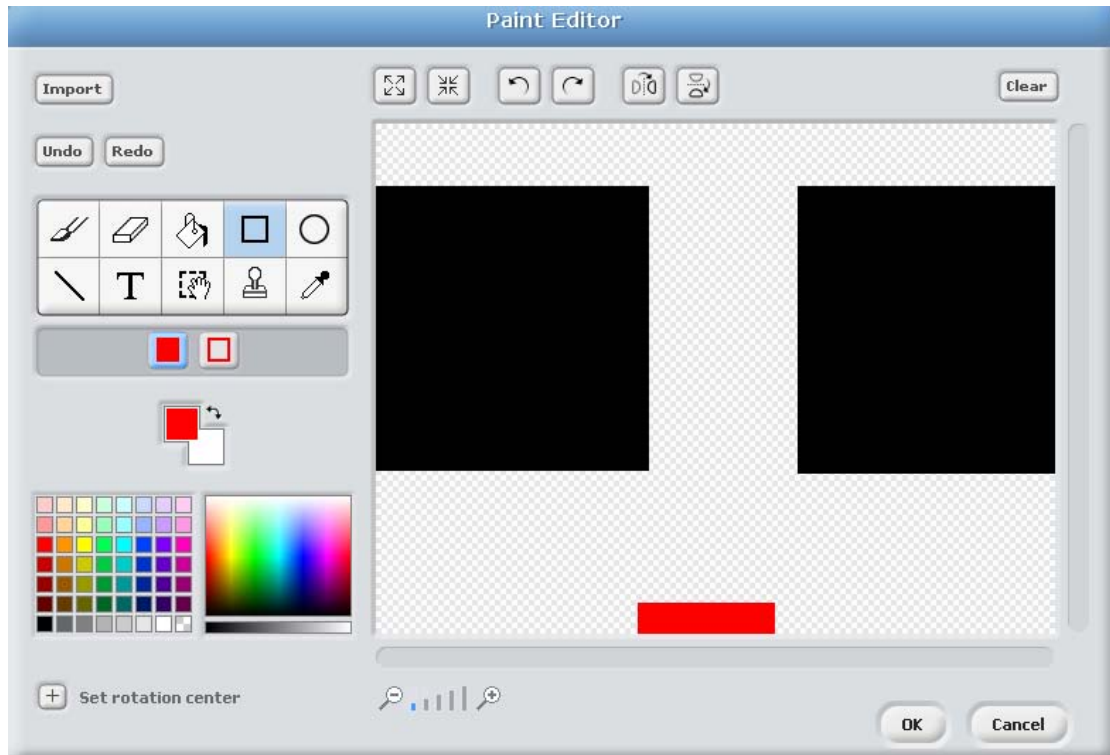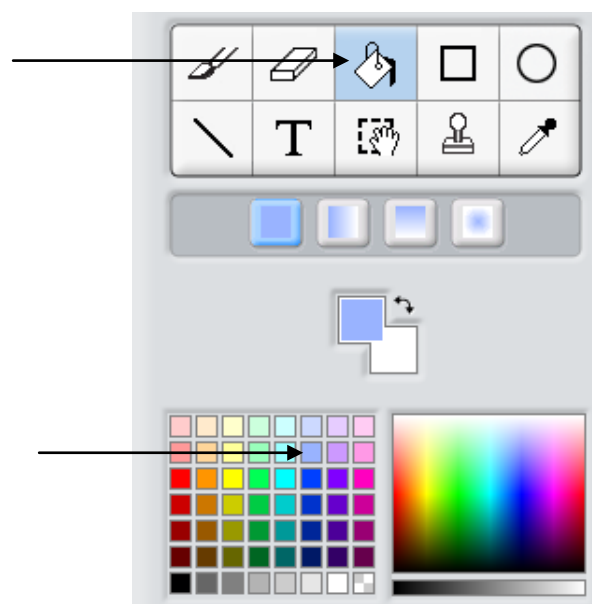
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Now change your colour to Red by clicking 'red' on the Palette:

Now add a smaller red rectangle at the bottom as shown:

Now select a Blue colour and use the FILL tool to colour the background blue:

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Your screen should look like this:
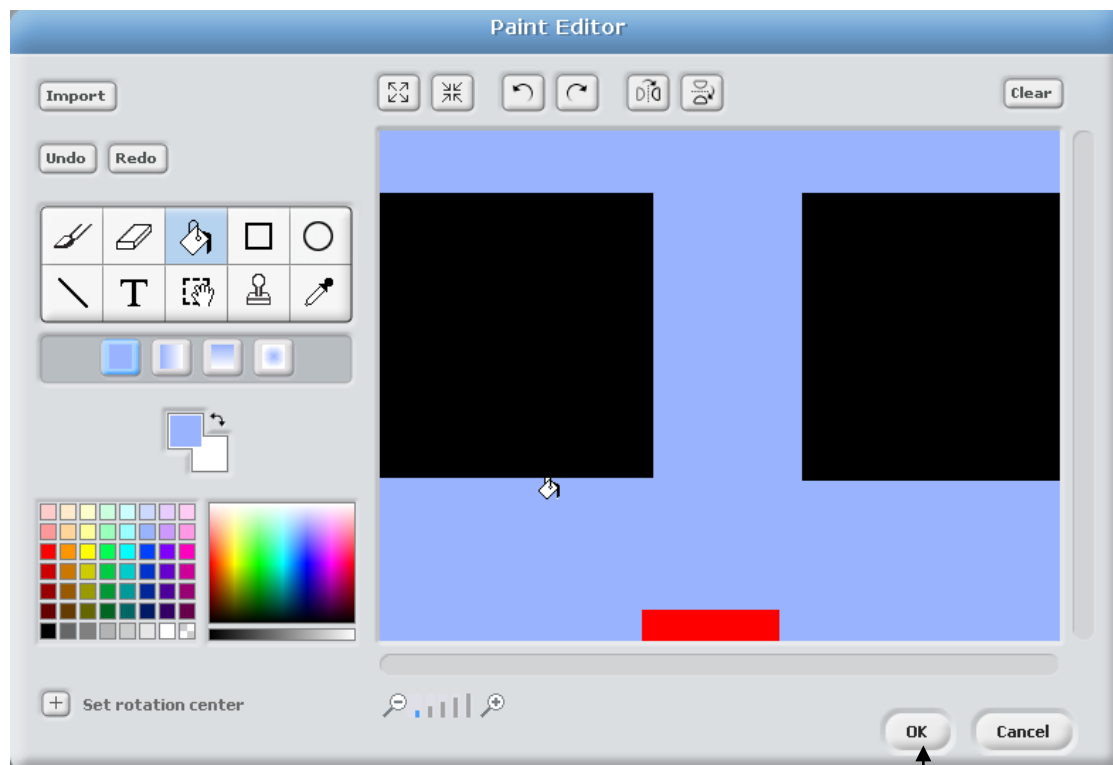
Click OK, and you will see the new background applied to your Project.

Step 6.   Making a New Sprite

Now we are going to add the rotating cross to our game.

Click the 'Paint New Sprite' button:

The Paint Editor window appears again.

This time use the 'Line' tool and make a Cross, then click OK.

Use the Shrink Sprite / Enlarge Sprite buttons to make it the right size. (Look at Step 2 if you forgot)

Step 7.   Programming the Cross

The Cross is called 'Sprite1' – rename it 'Cross'.

At the moment, our cross doesn't do anything.

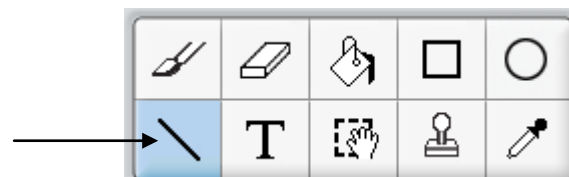We want it to rotate over and over again, which means we must use a *loop*. We will use the 'Forever' loop as we want it to rotate throughout the game.

Double click the Cross and add the following module:

This tells the Cross to repeat turning 1 degree forever.

Click the green flag to see the cross rotate!

Try changing the number of degrees and watch the effect this has.

Make sure you change it back to 1 degree before you continue.

Step 8   Adding the Block

You should now be able to create the Block Sprite.

Click the 'Paint New Sprite' button and draw a black rectangle.
(Look at Step 6 if you forgot)

Use the Shrink Sprite / Enlarge Sprite buttons to make it the correct size.
(Look at Step 2 if you forgot)

Rename this Sprite "Block".

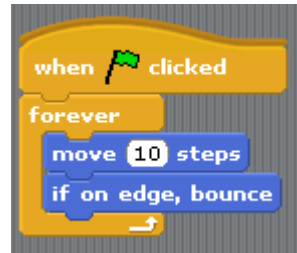Move it just above the red rectangle.

Step 9   Programming the Block

At the moment, our Block doesn't do anything.

We want it to move side to side over and over again.

Once again, we will use the 'Forever' loop.

Create the following module:

Note the use of . This tells the Block that if it touches the edge of the screen, "Bounce back". This way the block bounces back and forth across the screen – Forever.

Step 10.   Play the Game

It's time to have a go at the game.

Click the green flag and lets see if you can use the arrow keys to guide the Cat to the red rectangle!

Did you spot any problems??

You should have been able to get the Cat to the red rectangle very easily – because nothing happens if he touches a black area!!

This will be dealt with in the next step.

Step 11.   Touching Black

The object of our game is to get the Cat to the red rectangle without touching any Black obstacles.

If the Cat does touch the colour black, he should return to his starting position at the top left corner of the screen.

We must give him instructions to do this – we need to use an IF statement.

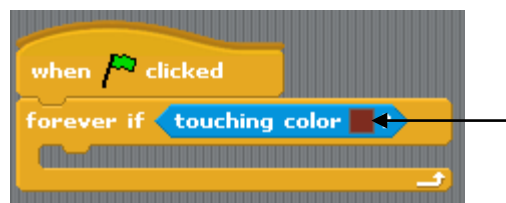Double click the Cat and add the following module:

From the 'Sensing' tab, drag in the 'touching colour ..' block and snap it in the *Condition Space*, as shown:
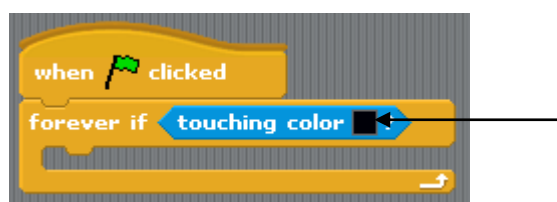

We have to change the colour to black.

Click the colour square:

You will see your mouse pointer change to a 'dropper'.

Now click on one of the Black areas of your game – you should see the colour square change to black:

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Now add the following block to the module so it looks like this:


(You will have to type in the correct co-ordinates)

This module tells the Cat:

"If you ever touch the colour black, return to your starting co-ordinates"

TRY IT!   Click the green flag to start your game – you should see that the cat returns to its starting position whenever it touches a black area!

Step 12   Setting the Starting Point

It is important to make sure the Cat starts at the same position for each game. To do this, we need to change the module we just created:

Change to
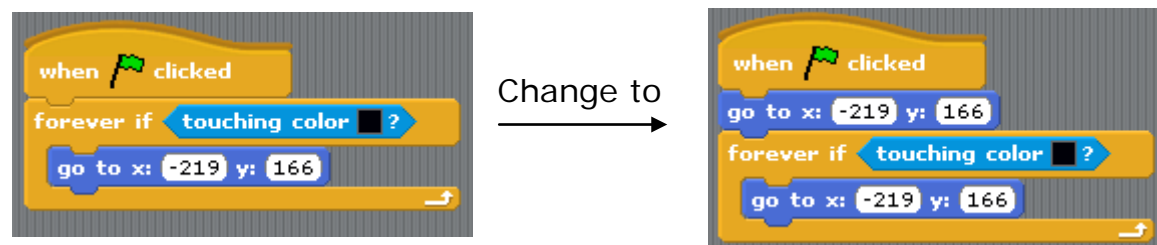
This sets the Cats starting position at the beginning of each game.

Step 13.   Winning the Game

At the moment, there is no 'sign' that we have won the game if the Cat gets to the red area.

We want the Cat to say 'Yipee! I did it!!!' if he touches the red area.

This module will be very similar to the one used in Step 11 – so you can look back at this step if you get stuck.

Double click the Cat and add the following module:

Remember to click the colour square and use the dropper to select 'Red'

This tells the Cat:
"If you ever touch the colour 'RED', say "Yipee I did it!!" for 5 seconds"

TRY IT!!   Click the green flag and test your game.

Your game should be difficult but **NOT IMPOSSIBLE!!**
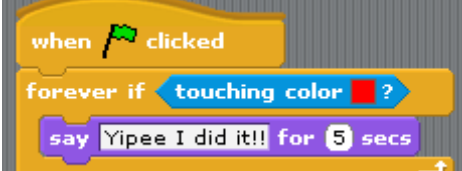
If your game is too difficult, here are a few things to try:

- Reduce the speed of the Cross / Block
- Reduce the size of the Cross / Block
- Reduce the size of the Cat

Well Done! You have just created the Maze Adventure game!!

Module Library

Here you will find all the modules used in the game and what they do.

Move a Sprite to the Right with the Right Arrow key	when right arrow key pressed / change x by 10
Move a Sprite to the Left with the Left Arrow key	when left arrow key pressed / change x by -10
Move a Sprite Up with the Up Arrow key	when up arrow key pressed / change y by 10
Move a Sprite Down with the Down Arrow key	when down arrow key pressed / change y by -10
Rotate a Sprite forever **(Used for the spinning cross)**	when [flag] clicked / forever / turn ↻ 1 degrees
Move a Sprite from side to side forever **(Used for the block)**	when [flag] clicked / forever / move 10 steps / if on edge, bounce
Return a Sprite to starting position whenever he touches black	when [flag] clicked / go to x: -219 y: 166 / forever if touching color [black] ? / go to x: -219 y: 166
Get a Sprite to say 'Yipee I Did it!' when he touches the winning colour.	when [flag] clicked / forever if touching color [red] ? / say Yipee I did it!! for 5 secs

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TASK   **Make Your Own**

You should now use what you have learned to create your very own computer game, similar to 'Maze Adventure'.

It should have the following features:

The main character should:

- Be controlled by all four arrow keys
- Return to his starting position if he touches the obstacle colour
- Say 'I WIN!' if he touches the winning colour

The game should also:

- Have *at least 2* moving obstacle Sprites (like the Cross and the Block)
- Have a suitable Background
- Be difficult but **NOT IMPOSSIBLE!!**

Use "Game Assessment Checklist 1" to make sure your game meets all the requirements. (Your teacher will give this to you)

Remember to use the Module Library to help you if you get stuck.

You can use any Sprites you wish.

Good Luck!

Show your teacher when you are finished.